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TUPELO

Four species of tupelo are recognized in this country. They are black tupelo, swamp tupelo, water tupelo, and Ogeechee tupelo. Tupelos probably have more common names than do the members of any similar group of species. One or more members of the genus grows in all of the eastern, central, and southern States. Black, water, and swamp tupelos are important commercially. Their woods are similar in appearance and each is difficult to distinguish from the others, even under a microscope. Tupelo wood normally has interlocked grain and tends to warp when dried. Most of the annual cut is used for making shipping containers; much of it is used for furniture.

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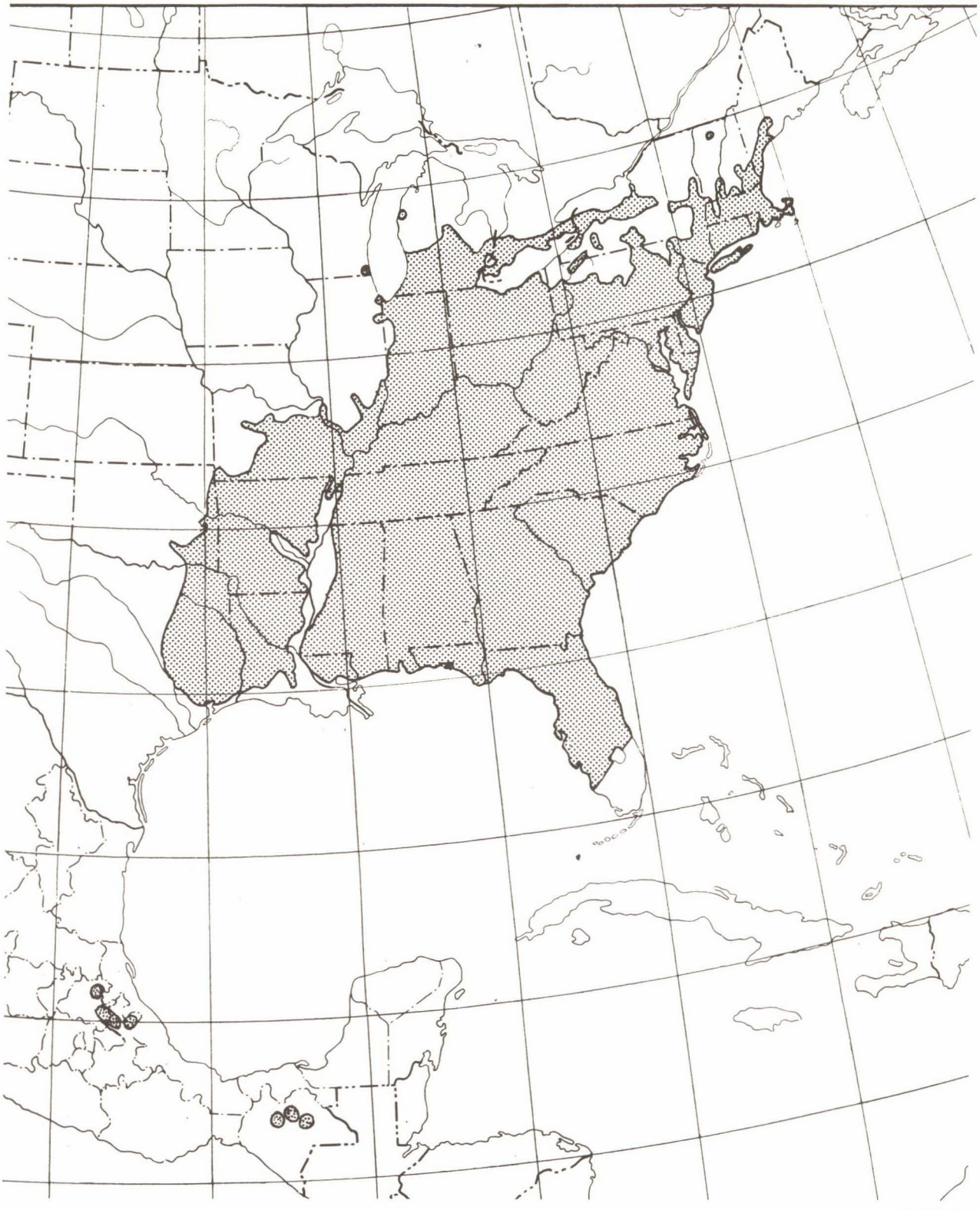

Figure 1.—**Natural range of black tupelo.**

TUPELO

(*Nyssa spp.*)

W. N. Darwin, Jr.[1]

The species and varieties of tupelo recognized in this country are: Black tupelo (*N. sylvatica* var. *sylvatica* Marsh.); swamp tupelo (*N. sylvatica* var. *biflora* [Walt.] Sarg.); water tupelo (*Nyssa aquatica* L.); and Ogeechee tupelo (*N. ogeche* Bartr.).

DISTRIBUTION

Black tupelo has the widest range of the native tupelos. It grows in extreme southern Ontario and in all the States of the United States east of the Mississippi River (fig. 1).

Black tupelo is adapted to a wide variety of sites. It survives as a shrub or scrubby tree in the dry eastern edge of the Great Plains, but develops into a tree 100 to 120 feet in height and up to 48 inches in diameter at breast height on the lower slopes and terraces in the southeastern United States. In the lowlands black tupelo makes its best growth on the loamy, well-drained ridges of the second or higher bottoms and on silty alluvial flats. It grows only sparingly in the first bottoms. In the uplands it develops best on the moist lower slopes and in coves. The tree will stand shallow overflow or shallow pools resulting from winter rain, but apparently never grows on sites that are usually covered by standing water.

Black tupelo is moderately tolerant to shade and is not dominant in any major forest type, although it grows with a large number of other trees. In the northern forest region, in New England, Pennsylvania, New Jersey, and the Lake States, it is associated with yellow birch, sycamore, slippery and rock elms, and swamp white oak. In the central forest region it is associated with post oak, black oak, scarlet oak, chestnut oak, white oak, and northern red oak. In the southern lowlands it is an associate of the white oaks, red oaks, sugarberry, elm, and ash. Since it grows on drier sites, black tupelo is more susceptible to damage by fire than are the other species. Hot fires cause severe mortality and cull.

The range of swamp tupelo is limited to the Atlantic Coastal Plains and to estuaries from Maryland to Florida and along the Gulf of Mexico to southeastern Louisiana. Swamp tupelo is a major member of forest types in the muck and coastal swamps in the lower coastal plains from southeastern Virginia to southern Mississippi. In these areas it is normally found in dense even-aged stands, but it also frequently occurs in association with cypress, sweetbay, and water tupelo. Throughout its range, swamp tupelo grows in the slackwater areas along minor streams and branch heads, and in low coves and spring seepage areas. Sites favorable for swamp tupelo normally do not dry up during the growing season. The soils range from highly organic mucks to heavy clays and are usually acidic.

The range of water tupelo extends throughout the Coastal Plains from southeastern Virginia to southern Georgia, and from northwestern Florida along the Gulf of Mexico to southeastern Texas. It extends up the Mississippi Valley as far north as the southern tip of Illinois (fig. 2). Water tupelo is almost certain to be present in the alluvial floodplains of streams and rivers. Occasionally it is seen along the drainages from coastal muck swamps but never in the interior of the swamps. It will make good growth in spring seepage areas where water stands for periods of time. Water tupelo develops best in the bottom lands of the major rivers and large streams in the southeastern United States and in the large swamps of southwestern Louisiana and southeastern Texas. Soils in these areas range from plastic clays to silt loams. Many sites suitable for water tupelo are dry during the midsummer or fall, but accumulate 3 to 6 feet of water during the winter.

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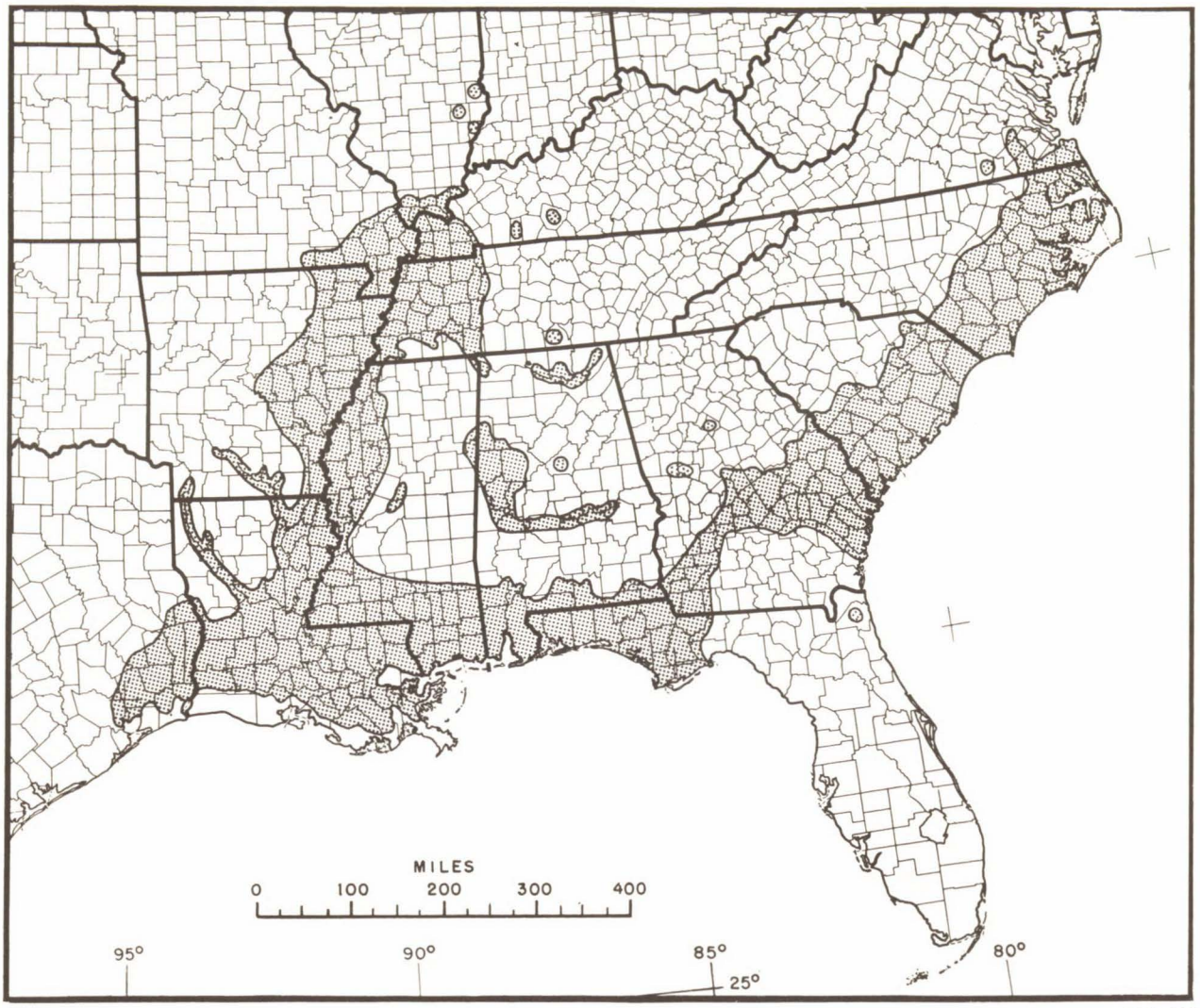

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Figure 2.—**Natural range for water tupelo.**

Water tupelo may occur in pure stands and in association with cypress.

The range of Ogeechee tupelo is limited to the southern tip of South Carolina, southeastern Georgia, and northern Florida, where the tree occupies the alluvial flats and stream bottoms.

DESCRIPTION AND GROWTH

The simple, alternate leaves of black tupelo are linear-oblong to obovate in shape and have an acute apex and wedge-shaped base. The margin is smooth or has a few coarse teeth. The leaves range from 2 to 5 inches in length and ½ inch to 3 inches in width. They are thick and firm and have a dark green upper surface and a smooth, pale-green lower surface. The leaves are usually crowded together at the ends of the twigs (fig. 3). Black tupelo is one of the first tree species to show fall color, the upper surfaces turning a bright red or scarlet.

The flowers of black tupelo appear in axillary clusters in early spring and are greenish white. Male and female flowers normally appear on separate trees. The fruit is a drupe ⅓ inch to ⅔ inch in diameter that matures in October. It is dark blue, has a bitter taste, and a solitary light brown stone. There are about 3,300 cleaned seeds per pound. When mature, the winter buds are about ¼ inch long and are reddish brown.

The bark of black tupelo is distinctive: It is deeply fissured, taking the form of irregularly shaped blocks, and is brown to black in color (fig. 4). The crown of the tree is typically flat-topped with horizontal branches. The tree rarely has a distinctly swollen or flaring butt, and is gradually tapered with an almost cylindrical form.

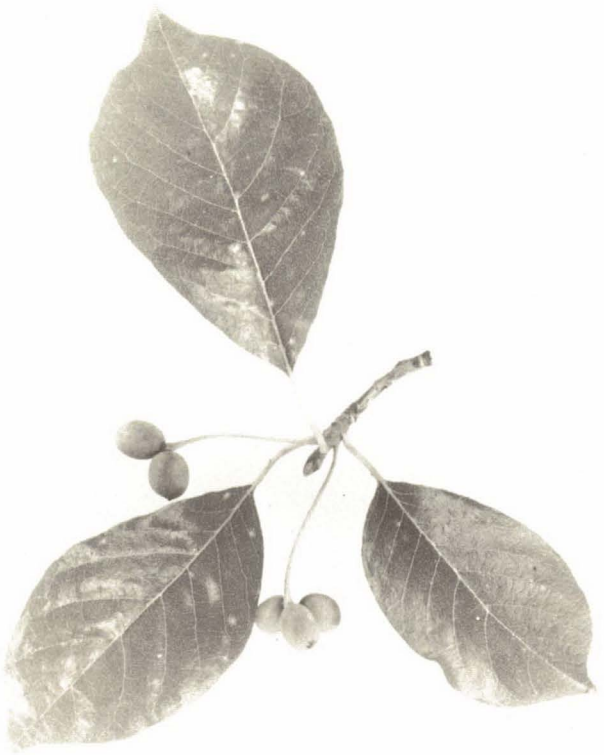

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Figure 3.—Leaves and fruit of black tupelo.

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Figure 4.—Bark of black tupelo.

Swamp tupelo has excellent form and on better sites will average 2½ to 3 inches of diameter growth in 10 years. Its mature height will exceed 100 feet, and it will reach a diameter above the butt swell of 40 or more inches. In even-aged second growth stands, this moderately tolerant tree fails to express dominance, and the stands stagnate and appear to endure competition indefinitely. Mortality is not sufficient to keep the stand naturally thinned and to maintain good diameter growth. Response to thinning after stagnation is only slight. To maintain a satisfactory growth rate, thinning must be done before stagnation.

Leaves of swamp tupelo are 2 to 4 inches long and only ¾ to 1 inch wide. They are simple and alternate and have an oblong to elliptic form with a gradually narrowing base and acute apex. The edge is more commonly smooth (fig. 5). The leaves have a yellow-green lustrous upper surface and a paler smooth lower surface that does not have the downy pubescence characteristic of water tupelo. The flowers are whitish; the male and female flowers develop on different trees. The flowers appear when the leaves are almost fully developed. The fruit is a small drupe about ⅓ inch long, is dark blue in

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Figure 5.—Leaves and fruit of swamp tupelo.

color, and will float when partially dry. The terminal winter bud is small, about ⅛ inch long, and is dark reddish brown. On some trees the bark is gray in color, but more generally it is dark reddish brown. The bark is 1 inch thick and has deep longitudinal furrows (fig. 6). The stem of swamp tupelo is commonly less swollen than water tupelo but tapers more gradually.

Water tupelo, under the best growing conditions, will reach a height of more than 100 feet and a diameter of 3 or 4 feet above the butt swell. On a good site it will grow 2½ to 3 inches in diameter in 10 years if the stand is properly thinned (fig. 7). This tree sprouts readily from stumps (fig. 8). In dense second-growth stands it stagnates like swamp tupelo, and response to thinning is slight if stagnation has been prolonged.

The leaves of water tupelo are simple, alternate, oblong-ovate, and commonly long-pointed at the apex. Though normally smooth-edged, they may have slightly toothed margins. Mature leaves have a dark-green, glabrous upper surface and a pale-green downy-pubescent lower surface. The leaves range from 5 to 7 inches long and from 2 to 4 inches wide. The petioles are stout, hairy, and are 1 inch to 2½ inches long.

The flowers of water tupelo are similar to those of black tupelo and appear in March and April. Male and female flowers normally appear on different trees. The fruit, a dark purple drupe 1 inch long with conspicuous pale dots, matures in early autumn. The single stone is light brown to nearly white, and the fruit will float after it has dried a little. It is dispersed by animals and by water and may remain viable for as long as two

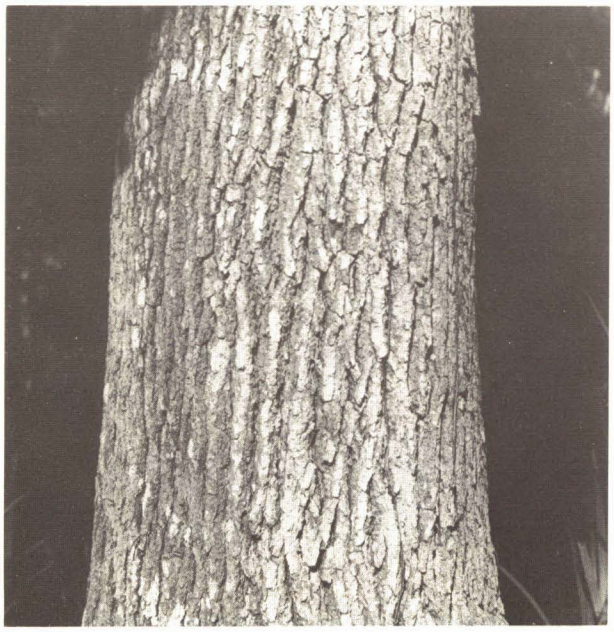

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***Figure 6.*—Deeply furrowed bark of swamp tupelo.**

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***Figure 7.*—Thinning in an even-aged stand of water tupelo.**

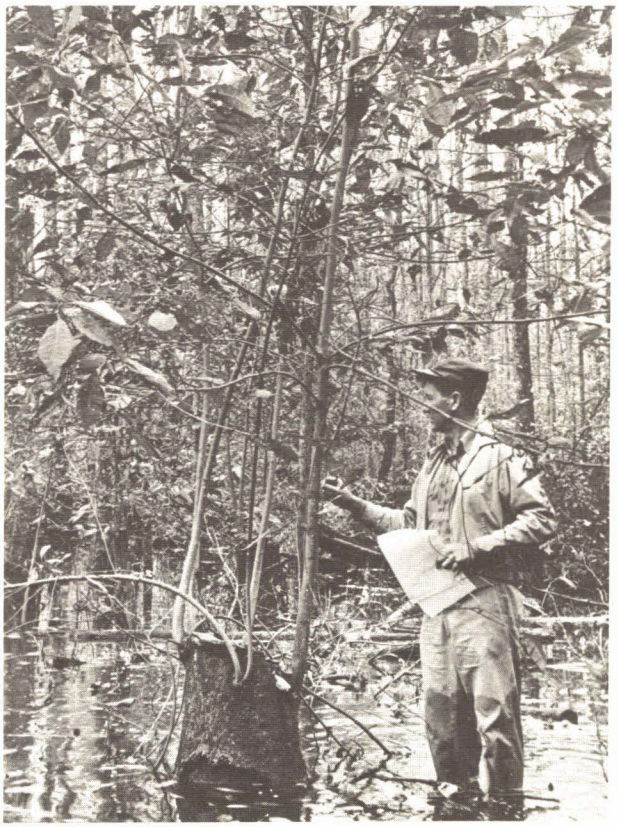

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***Figure 8.*—Water tupelo stump sprouting two years after timber cut.**

years. The terminal winter bud is smaller than that of black tupelo; the axillary buds are tiny and appear to be almost embedded in the bark.

The bark is thin, about ¼ inch thick, dark brown to gray in color, and has well-defined longitudinal furrows. The tree has a narrow open crown and a greatly swollen butt that tapers rapidly to a long clear stem.

Ogeechee tupelo is normally a shrub or small malformed tree 25 to 30 feet in height. Young growth closely resembles that of more desirable species.

COMMON NAMES

Tupelos probably have more common names than do the members of any similar group of species.

Black tupelo is also known as blackgum, pepperidge, sour-gum, tupelo, tupelo-gum, and gum tree.

Swamp tupelo is also known as blackgum, swamp black tupelo, swamp blackgum, and bastard blackgum.

Water tupelo is also known as gum, tupelo, swamp tupelo, swamp-gum, tupelo-gum, bay poplar, and hazel pine.

Ogeechee tupelo is also known as Ogeechee gum, Ogeechee-lime, wild lime tree, gopher plum, white tupelo, sour tupelo-gum, sour tupelo, white tupelo gum, lone tupelo, lime tree, and bee tupelo.

SUPPLY

In 1970 the supply of tupelo timber was estimated at about 25½ billion board feet (International ¼ rule) in trees of sawtimber size, and 9¾ billion cubic feet in growing stock, mostly water and swamp tupelo. Slightly more than half of this timber is in North Carolina,

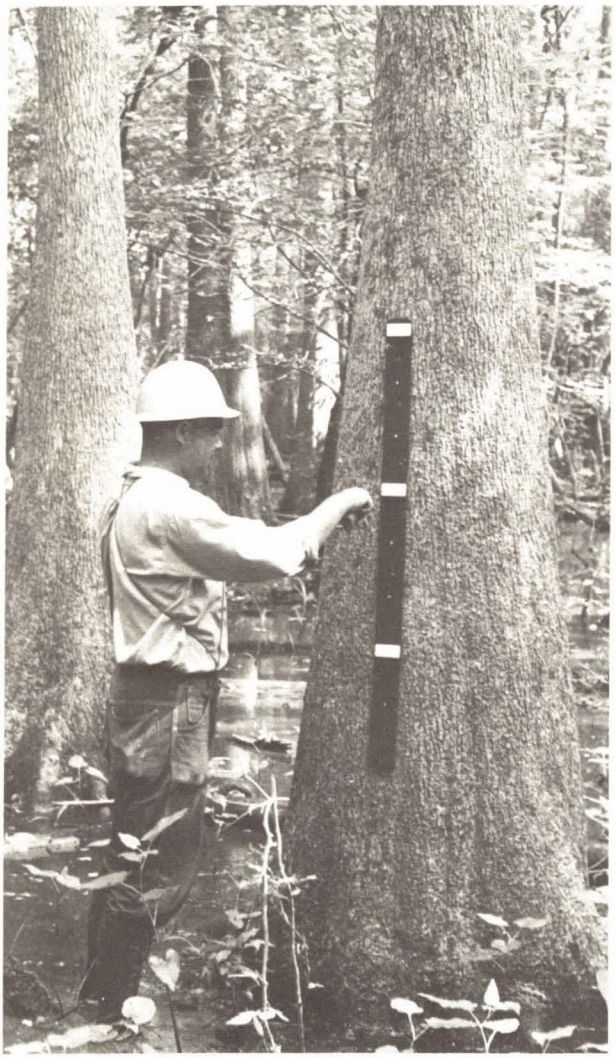

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Figure 9.—**Swollen butt of water tupelo showing rapid tapering.**

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Figure 10.—**Ogeechee tupelo grown to about 30 feet in height.**

Louisiana, and Georgia. The supply of tupelo timber represents about 4 percent of the total timber supply of all kinds in the southern States.

PRODUCTION

The total yearly cut of the tupelos is more than 350 million board feet, lumber scale. In 1965 about 385 million board feet of tupelo lumber was produced, 9 million board feet was used for veneers, and at least 13 million board feet from bolts was sawn for specialty products such as furniture squares and box boards.

CHARACTERISTICS AND PROPERTIES

Wood of all the tupelos is quite similar in appearance and is difficult to separate by species, even with a microscope. With a specific gravity of 0.45 to 0.50, tupelo wood is moderately heavy. It has a long fiber for a hardwood, averaging 2.0 mm in length. The grain is interlocked. The wood has no characteristic odor or taste. Color of the heartwood is brownish gray while the sapwood is lighter. The transition between the heartwood and sapwood is normally gradual. The wood is diffuse-porous; vessels and rays are difficult to distinguish, as are the annual rings.

Tupelo wood has a natural tendency to warp when dried, especially when plain sawn. The wood shows a characteristic figure when quarter-sawn. Quarter-sawn lumber is easier to dry than is plain-sawn lumber; probably half of all the tupelo lumber produced is quarter-sawn. Both quarter- and plain-sawn lumber can be dried satisfactorily with proper drying methods, however. While the wood lacks natural disability, it is moderately strong, is easily penetrated by preservatives, and holds paint well. It is considered to be somewhat difficult to glue.

PRINCIPAL USES

Large quantities of tupelo are used in the production of manufactured products such as furniture, shipping containers, millwork, and the like. In 1965, tupelo provided about 65 million board feet of lumber for the manufacture of furniture, representing approximately 2 percent of all lumber used in that industry. In the same year, tupelo supplied about 17 million square feet of plywood and 7 million square feet of veneer representing about 2.5 percent and 5 percent, respectively, of all plywood and veneer used by the furniture industry in the U.S. Also, about 11 million board feet of tupelo lumber and 5 million square feet of veneer and plywood was used for manufacture of shipping containers. Uses such as cross ties, bridge ties and crossing planks consumed about 60 million board feet of lumber in 1965.

Tupelo wood is desirable for the manufacture of pulp for paper. Where it is accessible and plentiful, its use for hardwood pulp is probably second only to that of sweetgum.

Minor uses of tupelo are for cigar and tobacco boxes, wood novelties, and factory floors and platforms that are subject to heavy wear.

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